ARS Aleut Remediation

January 11, 2019

Mr. Chris McLellan
Hard Rock Construction, L.L.C.
1255 Peters Rd
Harvey, La 70058

Subject: Report of Findings from January 3-4, 2019 Gamma Walkover Survey of Lowerline Street, New Orleans, LA

Chris,

On January 3rd and 4th, 2019, technicians from ARS Aleut Remediation (AAR) conducted a gamma walkover survey of the 3400 block of Lowerline Street in New Orleans. The 3400 block is located between Edinburgh and Olive Streets and is intersected by Coolidge Court. This is the site of the radium-226 source remediation conducted during the week of December 17, 2018.

The scope of the December 17 remediation was based on the triage report provided by the Department of Energy. The triage report indicated that the source was either a point or highly localized source with a strength between 1 and 10 millicuries. It was estimated to be located at between 12 and 16 inches in depth. The source location had been identified and marked on the street by the Louisiana Department of Environmental Quality (LDEQ). Based on the report, AAR mobilized according to the approved work plan to remediate the source and remove up to five drums of contaminated soil that may have been impacted by a ruptured source. AAR measured the radiation level at the demarcated location and found it equivalent to that provided in the triage report.

A localized source of radiation consistent with the triage report was not discovered during the excavation. Rather, soil that was highly contaminated with radium-226 was discovered at approximately 24 to 30 inches in depth, comingled with a layer of oyster-shell roadbed and soil. The soil was visually unremarkable. Five drums of contaminated soil, including one drum of highly radioactive source material, was removed from the excavation. Additional contamination was located in the excavation at levels exceeding 100 times the cleanup criteria specified by LDEQ. As the extent and magnitude of the remediation exceeded that specified in the work plan, AAR suspended work and the area placed in a safe condition. Waste materials were containerized and transported to the ARS laboratory in Port Allen for characterization. The excavation was backfilled with clean gravel and cold-patch applied.

A post-job radiation survey was performed to document conditions around the excavation site. The survey revealed additional sources of radiation adjacent to the original location, indicating the source was not localized as the triage report indicated. The results of the survey were communicated to the City of New Orleans along with a request to perform a

thorough gamma radiation survey of Lowerline Street to assist in identifying the magnitude and extent of subsurface contamination.

After receiving approval from the City, a gamma radiation survey was performed using a high-precision global positioning system (GPS) and sodium iodide detector. The sodium iodide detector is capable of detecting the gamma radiation emitted by radium-226. During the survey, the detector was passed within 4 inches of the asphalt surface and the radiation response was logged every second. Over 7000 measurements were made during the survey. The survey investigated the 3400 block of Lowerline and a portion of Coolidge Court at the intersection. Multiple areas of elevated radiation were discovered along Lowerline Street. A graphical depiction of the survey results are attached. Data points denoted in green indicate radiation levels which are equivalent to background. Data points denoted in other colors are considered to be above background. Above background radiation levels are indicative of subsurface contamination. The area with the highest radiation level is shown on the graphic. Measurements indicated a surface radiation level of 1.5 milliRoentgen per hour (mR/hr) which is equal to the level found at the originally designated location.

Based on the results of the gamma survey, a large central core of highly radioactive contamination adjacent to the original location is indicated. There are four smaller areas of contamination or "hotspots" identified around the central core. AAR estimates three areas of excavation, a 20 by 40 foot area around the central core, a 5 by 5 foot area around the northern "hotspot" and a 10 by 10 foot area around the "hotspots" to the southwest of the central core. A depth of 30 inches is estimated over the excavated area with deeper excavation in localized areas being necessary to meet the cleanup criteria specified by LDEQ.

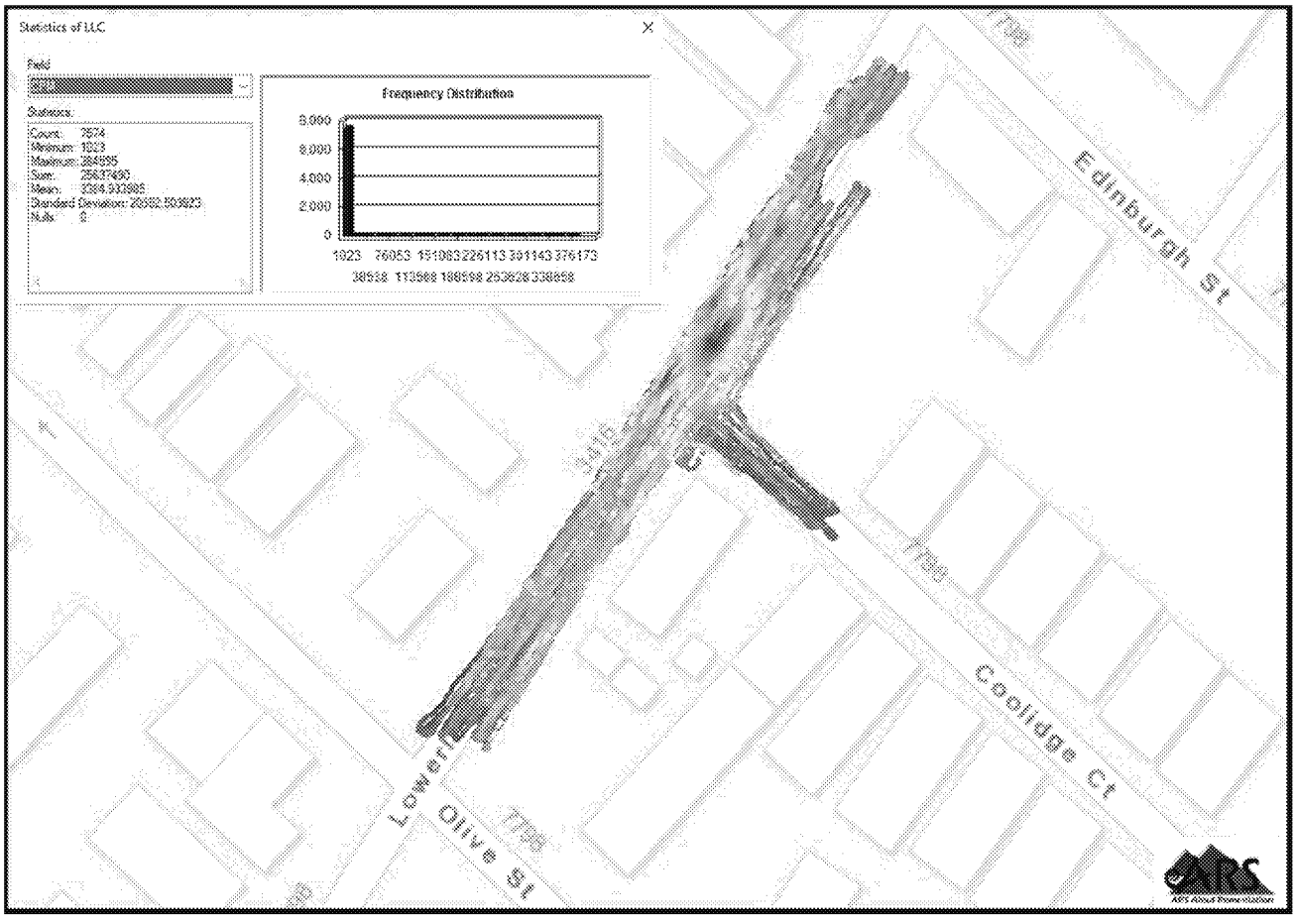
Sincerely,

G Greg Lord

G. Greg Lord
Senior Project Manager
ARS Aleut Remediation, LLC

CC: Kristine Puckett
Kelly Ausbrooks

ARS Aleut Remediation



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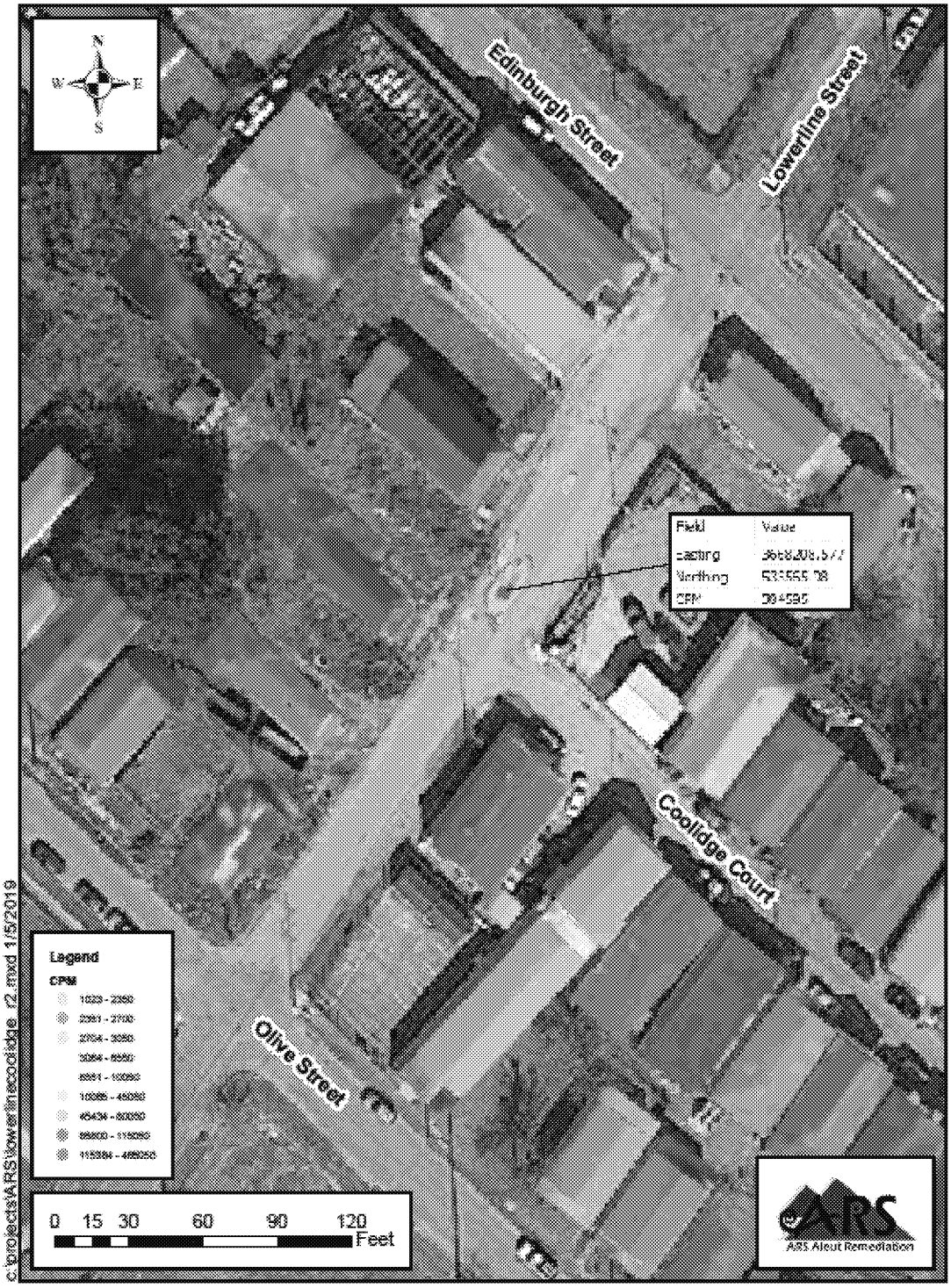

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